Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

Big Cajun I Power Plant
Louisiana Generating, LLC
Jarreau, Pointe Coupee Parish, Louisiana
Agency Interest Number: 11917
Activity Number: PER20080001
Draft Permit 2260-00007-V2

I. APPLICANT:

Company:
Louisiana Generating, LLC
112 Telly Street, New Roads, LA 70760

Facility:
Big Cajun I Power Plant
7807 River Road, Jarreau, Pointe Coupee Parish, Louisiana
Approximate UTM coordinates are 657.56 kilometers East and 3394.41 kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS:

Big Cajun 1 Power Plant (Steam), an existing electric power generation facility owned by Louisiana Generating, LLC, began operation in 1972. The Big Cajun 1 Power Plant (Steam) currently operates under Permit Nos. 2260-00007-V1, PSD-LA-660(M-1), and Permit No. 2260-00007-IV1, issued January 9, 2008.

III. PROPOSED PERMIT / REOPENING INFORMATION:

Proposed Permit

An application and Emission Inventory Questionnaire were submitted by Louisiana Generating LLC on August 11, 2008.

Big Cajun 1 Power Plant (Steam) proposes to:

- Incorporate a case-by-case determination of Maximum Achievable Control Technology (MACT) for the CFB Boiler (EQT 1) in accordance with Section 112(g) of the Clean Air Act; and
- Revise the Phase II emission rates of mercury for the CFB Boiler (EQT 1) in order to reflect the emissions limitations imposed by the above referenced MACT determination.

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Project Description

Big Cajun I Power Plant (Steam) is an electric generating plant located in New Roads, LA. The facility proposes to construct and operate a new circulating fluidized bed (CFB) boiler and associated fuel handling equipment.

The CFB boiler will be designed to fire petroleum coke, coal, bagasse, and non-chemically treated wood products, with a maximum heat input rate of 2,330 MMBTU/hr. The CFB Boiler will use natural gas as a startup fuel. In a CFB boiler, solid fuel and a sorbent (typically limestone) are jointly fed directly to the combustion chamber. Primary air is injected from the bottom of the combustion chamber to provide combustion air as well as to fluidize the burning bed. Fluidization of the bed allows for high heat transfer rates at relatively low combustion temperatures. Because of the turbulence and velocity in the circulating bed, the fuel mixes with the bed material quickly and uniformly. Secondary air is introduced at various levels to ensure solids circulation, provide staged combustion for NOx reduction as well as control of carbon monoxide (CO) and volatile organic compounds (VOCs), and supply air for continuous combustion in the upper part of the combustion chamber.

As fuel is added to the CFB boiler it is quickly heated above its ignition point, ignites and becomes part of the burning bed. The fuel particles are entrained within the bed until they are consumed or removed in either the gas stream or with the bed ash. Entrainment of the fuel particles in the gas stream occurs when their size is in the range where the terminal and gas velocities are equal. As the fuel particle size decreases to the point that the terminal velocity is exceeded by the gas velocity, the particles are blown from the bed, collected by a particle separator, and returned to the boiler.

Permit No. 2260-00007-V1, issued on January 9, 2008, authorized the following project, to be conducted in two phases as described below:

During Phase I of this project, the CFB Boiler (EQT 1) and the supporting equipment will be constructed. Until such time as this occurs, Boiler #1 and Boiler #2 will be fully operational in accordance with the terms and conditions of this permit.

Phase II of this project will begin on the date that the CFB Boiler (EQT 1) begins commercial operation. Boiler #1 and Boiler #2 will then be decommissioned and dismantled. At no time will Boiler #1 and/or Boiler #2 and the CFB Boiler be operated concurrently.

Section 12 of the Permit Application, dated January 9, 2008, lists the permitted emission rate after the project (in tons per year) for each pollutant in the permit. These changes are summarized in the Permitted Air Emissions Section.

Permitted Air Emissions

Section 12 of the Permit Application, dated August 11, 2008, lists the permitted emission rate after the project (in tons per year) for each pollutant in the permit. These changes are summarized in the Permitted Air Emissions Section.

Estimated emissions in tons per year are as follows:

Pollutant	Phase II Before	Phase II After	Change
Mercury	0.146	0.007	- 0.139

Prevention of Significant Deterioration Applicability

The proposal contained in the permit application dated August 11, 2008, and submitted in support of this draft permit does not increase any pollutant by significant amounts. Therefore, PSD review was not required.

Acid Rain Program

This application was reviewed for compliance with the requirements of the Acid Rain program. This facility will meet all requirements of the Acid Rain program.

MACT Requirements

Big Cajun I Power Plant is a major source for toxic air pollutants. However, electric utility steam generating units are exempt from the requirements of LAC 33:III.Chapter 51 per LAC 33:III.5105.B.2.

Big Cajun I Power Plant is a major source for hazardous air pollutants. The proposed permit seeks to apply a case-by-case MACT determination in accordance with Section 112(g) of the Clean Air Act for repowering Big Cajun I Power Plant. This MACT determination imposes separate conditions for each of the following categories of HAPs: acid gases (including hydrofluoric acid and hydrochloric acid), mercury, metallic HAPs, and organic HAPs.

A review was conducted that compared the CFB Boiler to other similar projects that have been permitted across the Unites States of America as well as other technical data. The information from the comparison was used to establish a MACT Floor, which is the emission control achieved in practice by the best controlled similar source. Upon determination of the MACT Floor, an analysis was performed to determine the possibility of emissions control that would be more stringent than the MACT Floor. Emissions controls that are more stringent than the MACT Floor and

that are consistent with the definition of MACT have been incorporated into this MACT determination.

For metallic HAPs, Big Cajun I will comply with the existing particulate matter emission limitation of 0.011 lb/MMBTU. Since metallic HAPs are a subset of total particulate matter, compliance with this emission limitation will ensure that metallic HAPs are being controlled in accordance with MACT. Big Cajun I will utilize a baghouse in order to control emissions of metallic HAPs. Further, a performance test will be conducted in order to demonstrate that Big Cajun I will comply with their metallic HAP emission limitations when complying with the particulate matter emission limitation mentioned above.

For organic HAPs, Big Cajun I will monitor carbon monoxide emissions and control them to an emission rate of no more than 0.10 lb/MMBTU (when operating at a rate that is greater than or equal to the unit's maximum heat input of 2,330 MMBTU/hr) or to an emission rate of 0.15 lb/MMBTU (when operating at a rate that is less than the unit's maximum heat input of 2,330 MMBTU/hr). Since carbon monoxide and organic HAPs are both products of incomplete combustion, compliance with this emission limitation will ensure that organic HAPs are being controlled in accordance with MACT. Big Cajun I will utilize good combustion practices in order to control emissions of organic HAPs. Further, a performance test will be conducted in order to demonstrate that Big Cajun I will comply with their organic HAP emission limitations when complying with the carbon monoxide emission limitation mentioned above.

MACT for emissions of mercury has been determined to be the use of limestone injection and activated carbon injection in conjunction with a flue gas desulfurization scrubber and a fabric filter. MACT for emissions of acid gases (including hydrochloric acid and hydrofluoric acid) has been determined to be the use of limestone injection in conjunction with a flue gas desulfurization scrubber and a fabric filter. MACT for emissions of organic HAPs has been determined to be good combustion practices. MACT for emissions of metallic HAPs has been determined to be the use of a fabric filter.

The emissions limitations imposed by the above referenced MACT determination are summarized below:

Pollutant	Limitation	Averaging Period	Applies when firing ...
Hydrochloric Acid	0.00035 lb/MMBTU	Avg. of three 1 hr. tests	All fuels
Hydrofluoric acid	0.000044 lb/MMBTU	Avg. of three 1 hr. tests	All fuels
Mercury	0.008 lb/GWh	12 month rolling avg.	Bituminous coal
	0.003 lb/GWh	12 month rolling avg.	Petroleum coke
	0.005 lb/GWh	12 month rolling avg.	Subbituminous coal
Organic HAPs*	***0.10 lb CO/MMBTU	24 hr. block avg.	All fuels
	****0.15 lb CO/MMBTU	24 hr. block avg.	All fuels
Metallic HAPs**	0.011 lb PM/MMBTU	24 hr. avg.	All fuels

*Control of carbon monoxide (CO) is approved as a surrogate for control of organic HAPs. This approval was made because both CO and organic HAPs are products of incomplete combustion. A reduction in CO will indicate more complete combustion, which will translate to a reduction in organic HAP emissions.

**Control of particulate matter (PM) is approved as a surrogate for control of metallic HAPs. Metallic HAPs are a subset of total PM. Any technology that controls PM will also control metallic HAPs. A reduction in PM emissions will translate to a reduction in metallic HAP emissions.

*** Applies when unit operates at greater than or equal to 60 percent of its maximum operating rate of 2,330 MMBTU/hr.

****Applies when unit operates at less than 60 percent of its maximum operating rate of 2,330 MMBTU/hr.

The monitoring requirements imposed by the above referenced MACT determination are summarized below:

Pollutant	Monitoring conducted using ...
Hydrochloric acid	Annual Stack Test
Hydrofluoric acid	Annual Stack Test
Mercury	Mercury Continuous Emissions Monitoring System (CEMS)
Organic HAPs	Carbon Monoxide Continuous Emissions Monitoring System (CEMS)
Metallic HAPs	Monitoring Requirements of 40 CFR 64

All requirements imposed in accordance with Section 112(g) of the Clean Air Act can be found in the Specific Requirements section of this permit under the group entitled CRG0001 – MACT Requirements for CFB Boiler.

The facility complies with the ambient air standards (AAS).

Air Modeling Analysis

Emissions associated with the reopening were reviewed by the Air Quality Assessment Division to ensure compliance with the NAAQS and AAS. LDEQ did not require the applicant to model emissions.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to Section VIII of the draft Part 70 permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the draft Part 70 permit.

Regulatory Analysis

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the draft permit, or where provided, Tables 2, 3 and 4 of the draft permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the draft permit, or where provided, Tables 2, 3 and 4 of the draft permit.

IV. Permit Shields

A permit shield per 40 CFR 60.6(f) and LAC 33:III.507.I is not included in the proposed permits.

V. Periodic Monitoring

Compliance Assurance Monitoring

Federal regulation 40 CFR 64-Compliance Assurance Monitoring is applicable to this facility. The following emission source with pollution control equipment has a pre-control emission rate of a pollutant over 100 tons per year and was determined to require a CAM Plan: CFB-1 – CFB Boiler.

The baghouse serves to collect and reduce particulate emissions associated with the combustion of coal and petroleum coke. The monitoring of the differential pressure across the baghouse in addition to the monitoring of the readings from

the continuous opacity monitoring system (COMS) ensures that particulate emissions are being controlled.

Big Cajun I Power Plant will conduct performance tests to determine the appropriate ranges that assure compliance with the particulate matter emission rates within ninety (90) days of initial startup of the CFB Boiler. Within ninety (90) days of the completion of the performance test, Big Cajun I Power Plant will submit a revised CAM Plan that incorporates these indicator ranges to LDEQ for approval and, upon submittal, begin to operate under the proposed CAM Plan.

Once LDEQ approves the CAM Plan, Big Cajun I Power Plant will file a permit modification with the LDEQ Air Permits Division to incorporate the specifics of the plan, including the indicator ranges determined during the performance test, into the Title V permit within 180 days of the commencement of commercial operation of the CFB Boiler.

Case-by-case MACT in Accordance with Section 112(g) of the Clean Air Act

Case-by-case MACT in accordance with Section 112(g) of the Clean Air Act is applicable to this facility. Section 112(g) requires that any constructed or reconstructed major source of Hazardous Air Pollutants (HAPs) receive a case-by-case MACT determination if no standard has been promulgated under Section 112(d) or Section 112(h) for the source category. The following emission source that will be constructed at Big Cajun I Power Plant does not have an applicable MACT standard for its source category promulgated under Sections 112(d) or 112(h) of the Clean Air Act: CFB-1 – CFB Boiler. The MACT determination imposes separate monitoring conditions for each of the following categories of HAPs: acid gases (including hydrofluoric acid and hydrochloric acid), mercury, metallic HAPs, and organic HAPs.

Big Cajun I Power Plant (BCI) will continuously monitor mercury emissions using a mercury continuous emissions monitoring system (CEMS).

Particulate matter emissions will be used as a surrogate for metallic HAP emissions. BCI will continuously monitor the parameters established in the CAM Plan that is summarized above in order to show compliance with the particulate matter limitation.

Carbon monoxide emissions will be used as a surrogate for organic HAP emissions. BCI will continuously monitor carbon monoxide emissions using a carbon monoxide CEMS.

BCI will verify initial compliance with the hydrochloric acid and hydrofluoric acid emissions limitations during the initial performance test for each unit. BCI will verify compliance on a periodic basis by performing annual performance tests for these two pollutants.

VI. Applicability and Exemptions of Selected Subject Items		
ID No:	Requirement	Notes
GRP 3	Comprehensive Toxic Air Pollutant Emission Control Program [LAC 33:III.Chapter 51]	EXEMPT. Electric utility steam generating units are exempt from the requirements of Subchapter A of LAC 33:III.Chapter 51. [LAC 33:III.5105.B.2]
EQTs 2 - 4	Emission Standards for Sulfur Dioxide [LAC 33:III.1503]	EXEMPT. Units emit less than 250 tons of SO_2 per year. [LAC 33:III.1503.C]
EQT 2 EQT 3	Control of Emissions of Nitrogen Oxides [LAC 33:III.2201]	EXEMPT. These sources are required to comply with the more stringent NOx emissions limitation of 40 CFR 60, Subpart GG. [LAC 33:III.2201.C.15]
EQT 5 EQT 6	NSPS Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984. [40 CFR 60.110b]	DOES NOT APPLY. Storage tanks have a storage capacity of less than 75 cubic meters. [40 CFR 60.110b(a)]
EQT 8 EQT 9	National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers [40 CFR 63, Subpart Q]	DOES NOT APPLY. Cooling towers are not operated with chromium-water based treatment chemicals. [40 CFR 63.400(a)]
EQT 10 EQT 11	Control of Emissions of Nitrogen Oxides [LAC 33:III.2201]	EXEMPT. Units are operated less than 400 hours during the ozone season. [LAC 33:III.2201.H.12]
FUG 1	Fugitive Emission Control for Ozone Nonattainment Areas and Specified Parishes [LAC 33:III.2122]	DOES NOT APPLY. This facility is not listed as an affected facility. [LAC33:III.2122.A.1]

VII. Streamlined Requirements			
Unit or Plant Site	**Programs Being Streamlined**	**Stream Applicability**	**Overall Most Stringent Program**

Big Cajun I Power Plant	None	-	-

VIII. Glossary

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

Carbon Monoxide (CO) – A colorless, odorless gas which is an oxide of carbon.

Grandfathered Status- Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Hydrogen Sulfide - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

New Source Review (NSR) - A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to

ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: $\geq$ 10 tons per year of any toxic air pollutant; $\geq$ 25 tons of total toxic air pollutants; and $\geq$ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10}- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO_2) – An oxide of sulphur.

Title V permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.